both said microwave feedline and said antenna are located entirely outside of said balloon with said antenna ~~is~~ being longitudinally physically situated in cooperative relationship with said exterior surface of said balloon, thereby in use causing said inflated balloon pressing said diseased tissue to result in said antenna being in direct contact with irradiated tissue of said patient.

2 (original). The balloon catheter defined in Claim 1, wherein said catheter body comprises:

an input lumen that provides a first pathway for coolant fluid from a source situated outside of said balloon catheter to enter said balloon; and

an output lumen that provides a second pathway for said to leave said balloon and exit said balloon catheter.

3 (original). The balloon catheter defined in Claim 1, wherein:

said external antenna is a directional antenna.

4 (original). The balloon catheter defined in Claim 3, wherein:

said external directional antenna comprises a spiral microstrip structure.

5 (original). The balloon catheter defined in Claim 4, wherein said spiral microstrip structure comprises:

longitudinally-split plastic tubing having an inner longitudinal surface thereof enveloping said longitudinal external surface of said balloon with a metallic ground plane portion of said external directional antenna directly attached to said inner longitudinal surface of said tubing and a metallic spiral portion of said external directional antenna directly attached to an outer longitudinal surface of said tubing.

6 (original). The balloon catheter defined in Claim 1, wherein:

said external antenna is an omnidirectional antenna.

7 (original). The balloon catheter defined in Claim 6, wherein:

said external omnidirectional antenna comprises a metallic helical structure surrounding said longitudinal external surface of said balloon.

8 (original). The balloon catheter defined in Claim 1, wherein:

said external antenna is an external microwave antenna for transmitting microwave radiant energy to said diseased tissue while said balloon is inflated thereby to effect the heating of said diseased tissue.

9 (currently amended). In a system suitable for use in heat treating diseased prostate tissue of a patient, wherein said system comprises a balloon catheter including a catheter body, an inflatable balloon surrounding said catheter body, and an antenna; wherein in use (1) said catheter with said balloon in a deflated state may first be inserted into an orifice of said patient and positioned so that said antenna is aligned with said patient's prostate tissue and (2) said balloon may then be inflated so that an exterior surface of said balloon presses against lining tissue of said orifice that is adjacent to said patient's prostate tissue, the improvement wherein:

said antenna is a directional antenna that (1) is longitudinally physically situated in cooperative relationship with said exterior surface of said balloon, thereby in use causing said inflated balloon pressing against said lining tissue of said orifice that is adjacent to said patient's prostate tissue, to result in said antenna being in direct contact with said lining tissue of said patient and (2) transmits radiant energy of a given frequency band to said diseased prostate tissue in response to power within said given frequency band being supplied to said antenna; and

a power source and means including a feedline, both said power source and said feedline being located entirely outside of said balloon for supplying a given amount of power within said given frequency band to said external directional antenna, thereby to irradiate said diseased tissue and thereby effect the heating to a given therapeutic temperature.

10 (original). The system defined in Claim 9, wherein:

said given frequency band is the 915 MHz frequency band.

11 (original).The system defined in Claim 9, wherein said system further comprises a radiometer, and wherein:

said means including a feedline further includes a single-pole two-position switch for forwarding said given amount of power within said given frequency band from said power source to said feedline when said single-pole two-position switch is in a first switch position thereof and for forwarding thermal radiation received by said external directional antenna and supplied to said feedline to said radiometer when said single-pole two-position switch is in a second switch position thereof;

whereby said radiometer provides a reading indicative of the temperature of said irradiated diseased tissue.

12 (cancel).

13 (original).The system defined in Claim 12, wherein said balloon catheter comprises:

means for supplying said balloon's interior volume with a coolant fluid for removing heat from said lining tissue of said orifice thereby to maintain the temperature of said lining tissue of said orifice at a safe temperature.

14 (original).The system defined in Claim 13, wherein:

said safe temperature is no higher than 42°C.

15 (original).The system defined in Claim 13, wherein said balloon catheter comprises a catheter body surrounded by said balloon thereof, and said means for supplying said balloon's interior volume with a coolant fluid comprises:

an input lumen in said catheter body that provides a first pathway for coolant fluid from a source situated outside of said balloon catheter to enter said balloon; and

an output lumen in said catheter body that provides a second pathway for said to leave said balloon and exit said balloon catheter.

16 (original).The system defined in Claim 15, wherein said orifice of said patient is said patient's urethra.

17 (original).The system defined in Claim 9, wherein said orifice of said patient is said patient's urethra.